



DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[RTID 0648-XB234]

Taking of Marine Mammals Incidental to Specific Activities; Taking of Marine Mammals Incidental to Pile Driving and Removal Activities during the Metlakatla Seaplane Facility Refurbishment Project, Metlakatla, Alaska

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Notice; issuance of an incidental harassment authorization.

SUMMARY: In accordance with the regulations implementing the Marine Mammal Protection Act (MMPA) as amended, notification is hereby given that NMFS has issued an incidental harassment authorization (IHA) to the Alaska Department of Transportation and Public Facilities (AKDOT&PF) to incidentally harass, by Level B harassment only, marine mammals during pile driving/removal and down-the-hole drilling (DTH) activities for maintenance improvements to the existing Metlakatla Seaplane Facility (MSF) in Southeast Alaska.

DATES: This Authorization is effective for one year from issuance.

FOR FURTHER INFORMATION CONTACT: Stephanie Egger, Office of Protected Resources, NMFS, (301) 427-8401. Electronic copies of the application and supporting documents, as well as a list of the references cited in this document, may be obtained online at: <https://www.fisheries.noaa.gov/action/incidental-take-authorization-alaska-department-transportation-metlakatla-seaplane-facility>. In case of problems accessing these documents, or for anyone who is unable to comment via electronic mail, please call the contact listed above.

SUPPLEMENTARY INFORMATION:

Background

The MMPA prohibits the “take” of marine mammals, with certain exceptions. Sections 101(a)(5)(A) and (D) of the MMPA (16 U.S.C. 1361 *et seq.*) direct the Secretary of Commerce (as delegated to NMFS) to allow, upon request, the incidental, but not intentional, taking of small numbers of marine mammals by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if certain findings are made and either regulations are issued or, if the taking is limited to harassment, a notice of a proposed incidental take authorization may be provided to the public for review.

Authorization for incidental takings shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s) and will not have an unmitigable adverse impact on the availability of the species or stock(s) for taking for subsistence uses (where relevant). Further, NMFS must prescribe the permissible methods of taking and other “means of effecting the least practicable adverse impact” on the affected species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of such species or stocks for taking for certain subsistence uses (referred to in shorthand as “mitigation”); and requirements pertaining to the mitigation, monitoring and reporting of such takings are set forth. The definitions of all applicable MMPA statutory terms cited above are included in the relevant sections below.

Summary of Request

On August 10, 2020, NMFS received a request from the AKDOT&PF for an IHA to take marine mammals incidental to pile driving/removal and DTH activities during maintenance improvements to the existing MSF in Southeast Alaska. The application was deemed adequate and complete on November 23, 2020. The applicant also provided an addendum to their application on February 23, 2021 for the addition of eight piles, some

changes to their shutdown zones, and minor changes to their take estimates due to the increase of in-water work days from the eight additional piles. The applicant's request is for take of eight species of marine mammals by Level B harassment only. Neither the AKDOT&PF nor NMFS expects serious injury or mortality to result from this activity and, therefore, an IHA is appropriate.

Description of Planned Activity

The purpose of this project is to make repairs to the MSF. The existing facility has experienced deterioration in recent years and AKDOT&PF has conducted several repair projects. The facility is near the end of its useful life, and replacement of all the existing float structures is required to continue safe operation in the future. The planned project in Metlakatla is located approximately 24 kilometers (km) (15 miles (mi)) south of Ketchikan, in Southeast Alaska. Metlakatla, is on Annette Island, in the Prince of Whales-Hyder Census Area of Southeast Alaska. The Metlakatla Seaplane Facility is centrally located in the village of Metlakatla on the south shore of Port Chester.

The planned project includes pile driving/removal and DTH over 2 months (approximately 26 working days) beginning in August 2021. Pile installation and removal will be intermittent during this period, depending on weather, construction and mechanical delays, protected species shutdowns, and other potential delays and logistical constraints. Pile installation will occur intermittently during the work period, for durations of minutes to hours at a time. Approximately 18 days of pile installation and 8 days of pile removal will occur using vibratory and impact pile driving and some DTH to stabilize the piles. These are discussed in further detail below. The total construction duration accounts for the time required to mobilize materials and resources and construct the project.

Planned activities included as part of the project with potential to affect marine mammals include the noise generated by vibratory removal of steel pipe piles, vibratory

and impact installation of steel pipe piles, and DTH to stabilize piles. Pile removal will be conducted using a vibratory hammer. Pile installation will be conducted using both a vibratory and impact hammer and DTH pile installation methods. Piles will be advanced to refusal using a vibratory hammer. After DTH pile installation, the final approximate 3.048 m (10 ft) of driving will be conducted using an impact hammer so that the structural capacity of the pile embedment can be verified. The pile installation methods used will depend on sediment depth and conditions at each pile location. Pile installation and removal will occur in waters approximately 6 - 7 m (20 - 23 ft) in depth.

The project will involve the removal of 11 existing steel pipe piles (16-inch (in) diameter) that support the existing multiple-float structure. The multiple-float timber structure, which covers 8,600 square ft, will also be removed. A new 4,800-square-ft single-float timber structure will be installed in the same general location. Six 24-in diameter steel pipe piles will be installed to act as restraints for the new seaplane float. In addition, 12 temporary 24-in steel piles will be installed to support pile installation and removed following completion of construction.

DTH pile installation involves drilling rock sockets into the bedrock to support installation of the 6 permanent piles and 12 temporary piles. Rock sockets consist of inserting the pile in a drilled hole into the underlying bedrock after the pile has been driven through the overlying softer sediments to refusal by vibratory or impact methods. The pile is advanced farther into this drilled hole to properly secure the bottom portion of the pile into the rock. The depth of the rock socket varies, but 3.048 - 4.572 m (10–15 ft) is commonly required. The diameter of the rock socket is slightly larger than the pile being driven. Rock sockets are constructed using a DTH device with both rotary and percussion-type actions. Each device consists of a drill bit that drills through the bedrock using both rotary and pulse impact mechanisms. This breaks up the rock to allow removal of the fragments and insertion of the pile. The pile is usually advanced at the same time

that drilling occurs. Drill cuttings are expelled from the top of the pile using compressed air. It is estimated that drilling rock sockets into the bedrock will take about 1–3 hours (hrs) per pile.

Tension anchors will be installed in each of the six permanent piles. Tension anchors are installed within piles that are drilled into the bedrock below the elevation of the pile tip after the pile has been driven through the sediment layer to refusal. A 6- or 8-in diameter steel pipe casing will be inserted inside the larger diameter production pile. A rock drill will be inserted into the casing, and a 6- to 8-in diameter hole will be drilled into bedrock with rotary and percussion drilling methods. The drilling work is contained within the steel pile casing and the steel pipe pile. The typical depth of the drilled hole varies, but 20–30 ft is common. Rock fragments will be removed through the top of the casing with compressed air. A steel rod will then be grouted into the drilled hole and affixed to the top of the pile. The purpose of a tension anchor is to secure the pile to the bedrock to withstand uplift forces. It is estimated that tension anchor installation will take about 1–2 hrs per pile.

No concurrent pile driving is anticipated for this project.

Please see Table 1 below for the specific amount of time required to install and remove piles.

Table 1--Pile Driving and Removal Activities

						DTH Pile Installation (Rock Socket) Duration per pile (minutes)	DTH Pile Installatio n (Tension Anchor) Duration per Pile (minutes)	Total Duration of Activity per pile (hours)	Piles per Day (Range)	Total Days
Pile Diamete rand Type	Numbe rof Piles	Rock Socket s	Tension Anchors	Impact Strikes per Pile (duration in minutes)	Vibrator y Duration per Pile (minutes)					
Pile Installation										
24-in Steel Plumb Piles (Permanent)	4	4	4	20 (1-5)	15	180	120	5.5	0.5 (0-1)	8
24-in Steel Batter Piles (Permanent)	2	2	2	20 (1-5)	15	90	120	4	0.5 (0-1)	4
24-in Steel Piles (Temporary)	12	12	0	20 (1-5)	15	60	N/A	1.5	2 (1-3)	6
Pile Removal										
16-in Steel Piles	11	N/A	N/A	N/A	30	N/A	N/A	0.5	3 (2-4)	4
24-in Steel Piles (Temporary)	12	N/A	N/A	N/A	30	N/A	N/A	0.5	3 (2-4)	4
TOTAL S	29	18	6	N/A	N/A	N/A	N/A	N/A	N/A	26

Note: DTH = down-the-hole; N/A = not applicable

A detailed description of the planned MSF project is provided in the **Federal Register** notice for the proposed IHA (86 FR 34203; June 29, 2021).

Comments and Responses

A notice of NMFS' proposal to issue and IHA to AKDOT&PF was published in the **Federal Register** on June 29, 2021 (86 FR 34203). That notice described, in detail, AKDOT&PF's activity, the marine mammal species that may be affected by the activity,

and the anticipated effects on marine mammals. During the 30-day public comment period, NMFS received no public comments on this action.

Description of Marine Mammals in the Area of Specified Activities

Sections 3 and 4 of the application summarize available information regarding status and trends, distribution and habitat preferences, and behavior and life history, of the potentially affected species. Additional information regarding population trends and threats may be found in NMFS' Stock Assessment Reports (SARs;

<https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports>) and more general information about these species (e.g., physical and behavioral descriptions) may be found on NMFS' website (<https://www.fisheries.noaa.gov/find-species>).

Table 2 lists all species or stocks for which take is expected and authorized for this action, and summarizes information related to the population or stock, including regulatory status under the MMPA and Endangered Species Act (ESA) and potential biological removal (PBR), where known. For taxonomy, we follow Committee on Taxonomy (2020). PBR is defined by the MMPA as the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population (as described in NMFS' SARs). While no mortality is anticipated or authorized here, PBR and annual serious injury and mortality from anthropogenic sources are included here as gross indicators of the status of the species and other threats.

Marine mammal abundance estimates presented in this document represent the total number of individuals that make up a given stock or the total number estimated within a particular study or survey area. NMFS' stock abundance estimates for most species represent the total estimate of individuals within the geographic area, if known, that comprises that stock. For some species, this geographic area may extend beyond U.S.

waters. All managed stocks in this region are assessed in NMFS' U.S. Pacific and Alaska SARs (Carretta *et al.*, 2020; Muto *et al.*, 2020). All MMPA stock information presented in Table 2 is the most recent available at the time of publication and is available in the 2019 SARs (Carretta *et al.*, 2020; Muto *et al.*, 2020) and draft 2020 SARs (available online at: www.fisheries.noaa.gov/national/marine-mammal-protection/draft-marine-mammal-stock-assessment-reports).

Table 2--Marine Mammal Occurrence in the Project Area

Common name	Scientific name	Stock	ESA/MMPA status; Strategic (Y/N) ¹	Stock abundance (CV, N _{min} , most recent abundance survey) ²	PBR	Annual M/SI ³
Order Cetartiodactyla – Cetacea – Superfamily Mysticeti (baleen whales)						
Family Balaenopteridae (rorquals)						
Minke Whale	<i>Balaenoptera acutorostrata</i>	Alaska	-, -, N	N/A (see SAR, N/A, see SAR)	UND	0
Humpback Whale	<i>Megaptera novaeangliae</i>	Central N Pacific	-, -, Y	10,103 (0.3, 7,891, 2006)	83	26
Superfamily Odontoceti (toothed whales, dolphins, and porpoises)						
Family Delphinidae						
Killer Whale	<i>Orcinus orca</i>	Alaska Resident	-, -, N	2,347 (N/A, 2347, 2012)	24	1
		Northern Resident	-, -, N	302 (N/A, 302, 2018)	2.2	0.2
		West Coast Transient	-, -, N	349 (N/A, 349; 2018)	3.5	0.4
Pacific White-Sided Dolphin	<i>Lagenorhynchus obliquidens</i>	N Pacific	-, -, N	26,880 (N/A, N/A, 1990)	UND	0
Family Phocoenidae (porpoises)						
Dall's Porpoise	<i>Phocoenoides dalli</i>	AK	-, -, N	83,400 (0.097, N/A, 1991)	UND	38
Harbor Porpoise	<i>Phocoena phocoena</i>	Southeast Alaska Inland waters	-, -, Y	see SAR (see SAR, see SAR, 2012)	see SAR	34
Order Carnivora – Superfamily Pinnipedia						
Family Otariidae (eared seals and sea lions)						
Steller sea lion	<i>Eumetopias jubatus</i>	Eastern DPS	T, D, Y	43,201 a (see SAR, 43,201, 2017)	2592	112
Family Phocidae (earless seals)						
Harbor Seal	<i>Phoca vitulina</i>	Clarence Strait	-, -, N	27,659 (see SAR, 24,854, 2015)	746	40

¹ - Endangered Species Act (ESA) status: Endangered (E), Threatened (T)/MMPA status: Depleted (D). A dash (-) indicates that the species is not listed under the ESA or designated as depleted under the MMPA. Under the MMPA, a strategic stock is one for which the level of direct human-caused mortality exceeds PBR or which is determined to be declining and likely to be listed under the ESA within the foreseeable future. Any species or stock listed under the ESA is automatically designated under the MMPA as depleted and as a strategic stock.

² - NMFS marine mammal stock assessment reports online at: <https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region>. CV is coefficient of variation; Nmin is the minimum estimate of stock abundance. In some cases, CV is not applicable [explain if this is the case]

³ - These values, found in NMFS' SARs, represent annual levels of human-caused mortality plus serious injury from all sources combined (e.g., commercial fisheries, ship strike). Annual M/SI often cannot be determined precisely and is in some cases presented as a minimum value or range. A CV associated with estimated mortality due to commercial fisheries is presented in some cases.

A detailed description of the of the species likely to be affected by the project, including brief introductions to the species and relevant stocks as well as available information regarding population trends and threats, and information regarding local occurrence, were provided in the **Federal Register** notice for the proposed IHA (86 FR 34203; June 29, 2021) since that time, we are not aware of any changes in the status of these species and stocks; therefore, detailed descriptions are not provided here. Please refer to that **Federal Register** notice for these descriptions. Please also refer to NMFS' website (<https://www.fisheries.noaa.gov/find-species>) for generalized species accounts.

Potential Effects of Specified Activities on Marine Mammals and their Habitat

Acoustic effects on marine mammals during the specified activity can occur from vibratory and impact pile driving as well as during DTH of the piles. The effects of underwater noise from the AKDOT&PF's planned activities have the potential to result in Level B behavioral harassment of marine mammals in the vicinity of the action area. The effects of pile driving on marine mammals are dependent on several factors, including the size, type, and depth of the animal; the depth, intensity, and duration of the pile driving sound; the depth of the water column; the substrate of the habitat; the standoff distance between the pile and the animal; and the sound propagation properties of the environment. With both types, it is likely that the pile driving could result in temporary, short-term changes in an animal's typical behavioral patterns and/or avoidance of the affected area. The **Federal Register** notice for the proposed IHA (86 FR 34203; June 29, 2021) included a discussion of the effects of anthropogenic noise on

marine mammals, therefore that information is not repeated here; please refer to the **Federal Register** notice (86 FR 34203; June 29, 2021).

Anticipated Effects on Marine Mammal Habitat

The main impact issue associated with the planned activity would be temporarily elevated sound levels and the associated direct effects on marine mammals. The most likely impact to marine mammal habitat occurs from pile driving effects on likely marine mammal prey (*i.e.*, fish) near where the piles are installed. Impacts to the immediate substrate during installation and removal of piles are anticipated, but these would be limited to minor, temporary suspension of sediments, which could impact water quality and visibility for a short amount of time, but which would not be expected to have any effects on individual marine mammals. Impacts to substrate are therefore not discussed further. These potential effects are discussed in detail in the **Federal Register** notice for the proposed IHA (86 FR 34203; June 29, 2021) therefore that information is not repeated here; please refer to that **Federal Register** notice for that information.

Estimated Take

This section provides an estimate of the number of incidental takes authorization through this IHA, which will inform both NMFS' consideration of "small numbers" and the negligible impact determination.

Except with respect to certain activities not pertinent here, section 3(18) of the MMPA defines "harassment" as any act of pursuit, torment, or annoyance, which (i) has the potential to injure a marine mammal or marine mammal stock in the wild (Level A harassment); or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering (Level B harassment).

Take of marine mammals incidental to the AKDOT&PF's pile driving and removal activities (as well as during DTH) could occur as a result of Level B harassment

only. Below we describe how the potential take is estimated. As described previously, no mortality is anticipated or authorized for this activity. Below we describe how the take is estimated.

Generally speaking, we estimate take by considering: (1) acoustic thresholds above which NMFS believes the best available science indicates marine mammals will be behaviorally harassed or incur some degree of permanent hearing impairment; (2) the area or volume of water that will be ensonified above these levels in a day; (3) the density or occurrence of marine mammals within these ensonified areas; and, (4) the number of days of activities. We note that while these basic factors can contribute to a basic calculation to provide an initial prediction of takes, additional information that can qualitatively inform take estimates is also sometimes available (*e.g.*, previous monitoring results or average group size). Below, we describe the factors considered here in more detail and present the planned take estimate.

Acoustic Thresholds

Using the best available science, NMFS has developed acoustic thresholds that identify the received level of underwater sound above which exposed marine mammals would be reasonably expected to be behaviorally harassed (equated to Level B harassment) or to incur permanent threshold shift (PTS) of some degree (equated to Level A harassment).

Level B Harassment – Though significantly driven by received level, the onset of behavioral disturbance from anthropogenic noise exposure is also informed to varying degrees by other factors related to the source (*e.g.*, frequency, predictability, duty cycle), the environment (*e.g.*, bathymetry), and the receiving animals (hearing, motivation, experience, demography, behavioral context) and can be difficult to predict (Southall *et al.*, 2007, Ellison *et al.*, 2012). Based on what the available science indicates and the practical need to use a threshold based on a factor that is both predictable and measurable

for most activities, NMFS uses a generalized acoustic threshold based on received level to estimate the onset of behavioral harassment. NMFS predicts that marine mammals are likely to be behaviorally harassed in a manner we consider Level B harassment when exposed to underwater anthropogenic noise above received levels of 120 dB reference pressure micro Pascal (re 1 μ Pa (rms)) for continuous (*e.g.*, vibratory pile driving and DTH) and above 160 dB re 1 μ Pa (rms) for impulsive sources (*e.g.*, impact pile driving). The AKDOT&PF's planned activity includes the use of continuous (vibratory pile driving, DTH) and impulsive (impact pile driving) sources, and therefore the 120 and 160 dB re 1 μ Pa (rms) are applicable.

Level A Harassment - NMFS' Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 2.0) (Technical Guidance, 2018) identifies dual criteria to assess auditory injury (Level A harassment) to five different marine mammal groups (based on hearing sensitivity) as a result of exposure to noise. The technical guidance identifies the received levels, or thresholds, above which individual marine mammals are predicted to experience changes in their hearing sensitivity for all underwater anthropogenic sound sources, and reflects the best available science on the potential for noise to affect auditory sensitivity by:

- Dividing sound sources into two groups (*i.e.*, impulsive and non-impulsive) based on their potential to affect hearing sensitivity;
- Choosing metrics that best address the impacts of noise on hearing sensitivity, *i.e.*, sound pressure level (peak SPL) and sound exposure level (SEL) (also accounts for duration of exposure); and
- Dividing marine mammals into hearing groups and developing auditory weighting functions based on the science supporting that not all marine mammals hear and use sound in the same manner.

These thresholds were developed by compiling and synthesizing the best available science, and are provided in Table 3 below. The references, analysis, and methodology used in the development of the thresholds are described in NMFS 2018 Technical Guidance, which may be accessed at <https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-acoustic-technical-guidance>.

DTH pile installation includes drilling (non-impulsive sound) and hammering (impulsive sound) to penetrate rocky substrates (Denes *et al.* 2016; Denes *et al.* 2019; Reyff and Heyvaert 2019). DTH pile installation was initially thought be a primarily non-impulsive noise source. However, Denes *et al.* (2019) concluded from a study conducted in Virginia, nearby the location for this project, that DTH should be characterized as impulsive based on Southall *et al.* (2007), who stated that signals with a >3 dB difference in sound pressure level in a 0.035-second window compared to a 1-second window can be considered impulsive. Therefore, DTH pile installation is treated as both an impulsive and non-impulsive noise source. In order to evaluate Level A harassment, DTH pile installation activities are evaluated according to the impulsive criteria and using 160 dB rms. Level B harassment isopleths are determined by applying non-impulsive criteria and using the 120 dB rms threshold which is also used for vibratory driving. This approach ensures that the largest ranges to effect for both Level A and Level B harassment are accounted for in the take estimation process.

Table 3--Thresholds Identifying the Onset of Permanent Threshold Shift (Auditory Injury)

	PTS Onset Acoustic Thresholds* (Received Level)	
Hearing Group	Impulsive	Non-impulsive
Low-Frequency (LF) Cetaceans	<i>Cell 1</i> $L_{pk,flat}$: 219 dB $L_{E,LF,24h}$: 183 dB	<i>Cell 2</i> $L_{E,LF,24h}$: 199 dB
Mid-Frequency (MF) Cetaceans	<i>Cell 3</i> $L_{pk,flat}$: 230 dB $L_{E,MF,24h}$: 185 dB	<i>Cell 4</i> $L_{E,MF,24h}$: 198 dB

High-Frequency (HF) Cetaceans	<i>Cell 5</i> $L_{pk,flat}$: 202 dB $L_{E,HF,24h}$: 155 dB	<i>Cell 6</i> $L_{E,HF,24h}$: 173 dB
Phocid Pinnipeds (PW) (Underwater)	<i>Cell 7</i> $L_{pk,flat}$: 218 dB $L_{E,PW,24h}$: 185 dB	<i>Cell 8</i> $L_{E,PW,24h}$: 201 dB
Otariid Pinnipeds (OW) (Underwater)	<i>Cell 9</i> $L_{pk,flat}$: 232 dB $L_{E,OW,24h}$: 203 dB	<i>Cell 10</i> $L_{E,OW,24h}$: 219 dB
<p>* Dual metric acoustic thresholds for impulsive sounds: Use whichever results in the largest isopleth for calculating PTS onset. If a non-impulsive sound has the potential of exceeding the peak sound pressure level thresholds associated with impulsive sounds, these thresholds should also be considered.</p> <p><u>Note:</u> Peak sound pressure (L_{pk}) has a reference value of 1 μPa, and cumulative sound exposure level (L_E) has a reference value of 1 μPa²s. In this Table, thresholds are abbreviated to reflect American National Standards Institute standards (ANSI 2013). However, peak sound pressure is defined by ANSI as incorporating frequency weighting, which is not the intent for this Technical Guidance. Hence, the subscript “flat” is being included to indicate peak sound pressure should be flat weighted or unweighted within the generalized hearing range. The subscript associated with cumulative sound exposure level thresholds indicates the designated marine mammal auditory weighting function (LF, MF, and HF cetaceans, and PW and OW pinnipeds) and that the recommended accumulation period is 24 hours. The cumulative sound exposure level thresholds could be exceeded in a multitude of ways (i.e., varying exposure levels and durations, duty cycle). When possible, it is valuable for action proponents to indicate the conditions under which these acoustic thresholds will be exceeded.</p>		

Ensonified Area

Here, we describe operational and environmental parameters of the activity that will feed into identifying the area ensonified above the acoustic thresholds, which include source levels and transmission loss coefficient.

Sound Propagation

Transmission loss (TL) is the decrease in acoustic intensity as an acoustic pressure wave propagates out from a source. TL parameters vary with frequency, temperature, sea conditions, current, source and receiver depth, water depth, water chemistry, and bottom composition and topography. The general formula for underwater TL is:

$$TL = B * \log_{10}(R_1/R_2), \text{ where}$$

B = transmission loss coefficient (assumed to be 15)

R_1 = the distance of the modeled SPL from the driven pile, and

R_2 = the distance from the driven pile of the initial measurement.

This formula neglects loss due to scattering and absorption, which is assumed to be zero here. The degree to which underwater sound propagates away from a sound source is dependent on a variety of factors, most notably the water bathymetry and presence or absence of reflective or absorptive conditions including in-water structures and sediments. Spherical spreading occurs in a perfectly unobstructed (free-field) environment not limited by depth or water surface, resulting in a 6 dB reduction in sound level for each doubling of distance from the source ($20 \cdot \log(\text{range})$). Cylindrical spreading occurs in an environment in which sound propagation is bounded by the water surface and sea bottom, resulting in a reduction of 3 dB in sound level for each doubling of distance from the source ($10 \cdot \log(\text{range})$). As is common practice in coastal waters, here we assume practical spreading loss (4.5 dB reduction in sound level for each doubling of distance). Practical spreading is a compromise that is often used under conditions where water depth increases as the receiver moves away from the shoreline, resulting in an expected propagation environment that would lie between spherical and cylindrical spreading loss conditions. Practical spreading was used to determine sound propagation for this project.

Sound Source Levels

The intensity of pile driving sounds is greatly influenced by factors such as the type of piles, hammers, and the physical environment in which the activity takes place. There are source level measurements available for certain pile types and sizes from the similar environments recorded from underwater pile driving projects in Alaska that were evaluated and used as proxy sound source levels to determine reasonable sound source levels likely result from the AKDOT&PF's pile driving and removal activities (Table 4). Many source levels used were more conservative as the values were from larger pile sizes.

Table 4-- Sound Source Levels

Method and Pile Type	SSL at 10 meters			Literature Source	Federal Register Sources ^a
Continuous (Vibratory Pile Driving and DTH)	dB rms				
16-in Steel Piles	161			Navy 2012, 2015	A, B, C, H
24-in Steel Piles	161			Navy 2012, 2015	C, D, E, H, I
24-in DTH ^b	166			Denes <i>et al.</i> 2016 (Table 72) ^b	B, C, F, G
8-in DTH ^c	166			NMFS ^c	--
Impulsive (Impact Pile Driving and DTH)	dB rms	dB SEL	dB Peak		
24-in Steel Piles	193	181	210	Navy 2015	D, H, I
24-in DTH ^b	--	154	--	Denes <i>et al.</i> 2016 ^b	--
8-in DTH ^c	--	144	170	Reyff 2020	--

^a **Federal Register** sources:

A: 84 FR 24490; May 28, 2019, City of Juneau Waterfront Improvement Project, Juneau, Alaska

B: 85 FR 4278; January 24, 2020, Statter Harbor Improvement Project, Auke Bay, Alaska

C: 85 FR 673; January 7, 2020, Tongass Narrows Ferry Berth Improvements, Ketchikan, Alaska

D: 85 FR 19294; April 6, 2020, Port of Alaska's Petroleum and Cement Terminal, Anchorage, Alaska

E: 84 FR 56767; October 23, 2019, Auke Bay Ferry Terminal Modifications and Improvements Project, Juneau, Alaska

F: 85 FR 18196; April 1, 2020, Gastineau Channel Historical Society Sentinel Island Moorage Float Project, Juneau, Alaska

G: 85 FR 12523; March 3, 2020, Ward Cove Cruise Ship Dock Project, Juneau, Alaska

H: 83 FR 29749; June 26, 2018, City Dock and Ferry Terminal, Tenakee Springs, Alaska

I: 82 FR 48987; October 23, 2017, Sand Point City Dock Replacement Project, Sand Point, Alaska

^b DTH pile installation is treated as a continuous sound for Level B calculations and impulsive for Level A calculations

^c Tension anchor installation (8-in DTH) is currently treated as DTH pile installation

Notes: DTH = down-the-hole pile installation; SSL = sound source = level; dB = decibel; rms = root mean square; SEL = sound exposure level

Level A Harassment

In conjunction with the NMFS Technical Guidance (2018), in recognition of the fact that ensonified area/volume could be more technically challenging to predict because of the duration component in the new thresholds, we developed a User Spreadsheet that includes tools to help predict a simple isopleth that can be used in conjunction with marine mammal density or occurrence to help predict takes. We note that because of some of the assumptions included in the methods used for these tools, we anticipate that isopleths produced are typically going to be overestimates of some degree, which may result in some degree of overestimate of Level A harassment take. However, these tools offer the best way to predict appropriate isopleths when more sophisticated 3D modeling methods are not available, and NMFS continues to develop ways to quantitatively refine

these tools, and will qualitatively address the output where appropriate. For stationary sources (such as from impact and vibratory pile driving and DTH), NMFS User Spreadsheet (2020) predicts the closest distance at which, if a marine mammal remained at that distance the whole duration of the activity, it would not incur PTS. Inputs used in the User Spreadsheet (Tables 5 and 6), and the resulting isopleths are reported below (Table 7).

Table 5--NMFS Technical Guidance (2020) User Spreadsheet Input to Calculate PTS Isopleths for Vibratory Pile Driving

USER SPREADSHEET INPUT – Vibratory Pile Driving Spreadsheet Tab A.1 Vibratory Pile Driving Used.			
	16-in piles (removal)	24-in piles temporary (install/removal)	24-in plumb/batter piles permanent (install)
Source Level (RMS SPL)	161	161	161
Weighting Factor Adjustment (kHz)	2.5	2.5	2.5
Number of piles within 24-hr period	4	4	4
Duration to drive a single pile (min)	30	30	30
Propagation (xLogR)	15	15	15
Distance of source level measurement (meters)	10	10	10

Table 6--NMFS Technical Guidance (2020) User Spreadsheet Input to Calculate PTS Isopleths for Impact Pile Driving

USER SPREADSHEET INPUT – Impact Pile Driving Spreadsheet Tab E.1 Impact Pile Driving Used.							
	24-in piles (permanent)	8-in pile (DTH)	8-in pile (DTH)	8-in pile (DTH)	24-in pile (DTH)	24-in pile (DTH)	24-in pile (DTH)
Source Level (Single Strike/shot SEL)	181	144	144	144	154	154	154
Weighting Factor Adjustment (kHz)	2	2	2	2	2	2	2
Number of strikes per pile	20	54,000	108,000	162,000	54,000	81,000	162,000
Minutes per pile	-	60	120	180	60	90	180
Number of piles per day	3	1	1	1	1	1	1
Propagation (xLogR)	15	15	15	15	15	15	15
Distance of source level measurement (meters)	10	10	10	10	10	10	10

Table 7--NMFS Technical Guidance (2020) User Spreadsheet Outputs to Calculate Level A Harassment PTS Isopleths

USER SPREADSHEET OUTPUT		PTS isopleths (meters)				
Activity	Sound Source Level at 10 m	Level A harassment				
		Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid	Otariid
Vibratory Pile Driving/Removal						
16-in steel pile removal	161 SPL	10.8	1.0	16.0	6.6	0.5
24-in steel pile temporary installation and removal	161 SPL	10.8	1.0	16.0	6.6	0.5
24-in steel pile permanent	161 SPL	10.8	1.0	16.0	6.6	0.5
Impact Pile Driving						
24-in steel permanent installation (3 piles a day)	181 SEL/ 193 SPL	112.6	4.0	134.1	60.3	4.4
24-in steel permanent installation (2 piles a day)	181 SEL/ 193 SPL	85.9	3.1	102.3	46.0	3.3
24-in steel permanent installation (1 piles a day)	181 SEL/ 193 SPL	54.1	1.9	64.5	29.0	2.1
DTH						
8-in steel (60 min)	144 SEL/166 SPL	35.8	1.3	42.7	19.2	1.4
8-in steel (120 min)	144 SEL/166 SPL	56.9	2.0	67.8	30.4	2.2
8-in steel (180 min)	144 SEL/166 SPL	74.5	2.7	88.8	39.9	2.9
24-in steel (60 min)	154 SEL/166 SPL	166.3	5.9	198.1	89.0	6.5
24-in steel (90 min)	154 SEL/166 SPL	218.0	7.8	259.6	116.6	8.5
24-in steel (180 min)	154 SEL/166 SPL	346.0	12.3	412.1	185.2	13.5

Level B Harassment

Utilizing the practical spreading loss model, the AKDOT&PF determined underwater noise will fall below the behavioral effects threshold of 120 dB rms for marine mammals at the distances shown in Table 8 for vibratory pile driving/removal, and DTH. With these radial distances, the largest Level B harassment zone calculated was for DTH at 11,659 m. For calculating the Level B harassment zone for impact driving, the practical spreading loss model was used with a behavioral threshold of 160 dB rms. The maximum radial distance of the Level B harassment zone for impact piling

equaled 1,585 m for 24-in piles. Table 8 below provides all Level B harassment radial distances (m) during the AKDOT&PF's planned activities.

Table 8--Radial Distances (meters) to Relevant Behavioral Isopleths

Activity	Received Level at 10 meters (m)	Level B Harassment Zone (m)*
Vibratory Pile Driving/Removal and DTH		
16-in steel piles	161 SPL	5,415 (calculated 5,412)
24-in steel piles	161 SPL	5,415 (calculated 5,412)
8-in and 24-in DTH	166 SPL	11,660 (calculated 11,659)
Impact Pile Driving		
24-in steel piles	181 SEL/ 193 SPL	1,585

* Numbers rounded up to nearest 5 meters. These specific rounded distances are for monitoring purposes rather than take estimation.

Marine Mammal Occurrence and Take Calculation and Estimation

In this section we provide the information about the presence, density, or group dynamics of marine mammals that will inform the take calculations. Potential exposures to impact pile driving, vibratory pile driving/removal and DTH noises for each acoustic threshold were estimated using group size estimates and local observational data. As shown above, distances to Level A harassment thresholds for project activities are relatively small in most cases and mitigation (*i.e.*, shutdown zones) is expected to avoid Level A harassment from these activities. Accordingly, take by Level B harassment only will be considered for this action. Take by Level B harassment are calculated differently for some species based on monthly or daily sightings data and average group sizes within the action area using the best available data.

Minke Whales

There are no density estimates of minke whales available in the project area. These whales are usually sighted individually or in small groups of two or three, but there are reports of loose aggregations of hundreds of animals (NMFS 2018). Dedicated

surveys for cetaceans in Southeast Alaska found that minke whales were scattered throughout inland waters from Glacier Bay and Icy Strait to Clarence Strait (Dahlheim *et al.* 2009). All sightings were of single minke whales, except for a single sighting of multiple minke whales. Anecdotal observations suggest that minke whales do not enter Port Chester, and may be more rare in the project area (L. Bethel, personal communication, June 11, 2020 2020 as cited in the application). Based on the potential for one group of a group size of three whales entering the Level B harassment zone during the project, similar to what is observed in Tongass Narrows, NMFS authorizes, take of three minke whales over the 4-month project period by Level B harassment. No take by Level A harassment is authorized or anticipated to occur due to their rarer occurrence in the project area. In addition, the shutdown zones are larger than all the calculated Level A harassment isopleths for all pile driving/removal and DTH activities for cetaceans.

Humpback Whales

There are no density estimates for humpback whales available in the project area. Use of Nichols Passage and Port Chester by humpback whales is common but intermittent and dependent on the presence of prey fish. No systematic studies have documented humpback whale abundance near Metlakatla. Anecdotal information from Metlakatla and Ketchikan suggest that humpback whales' utilization of the area is intermittent year-round and local mariners estimate that one to two humpback whales may be present in the Port Chester area on a daily basis during summer months (L. Bethel, personal communication, June 11, 2020 2020 as cited in the application). This is consistent with reports from Ketchikan, which suggest that humpback whales occur alone or in groups of two or three individuals and abundance is highest in August and September (84 FR 34134; July 17, 2019). However, anecdotal reports suggest that humpback whale abundance is higher and occurrence is more regular in Metlakatla.

Therefore, NMFS authorizes two groups of two whales, up to four individuals per day, may be taken by Level B harassment for a total of 104 humpback whales (4 whales per day * 26 days = 104 humpback whales).

Under the MMPA, humpback whales are considered a single stock (Central North Pacific); however, we have divided them here to account for distinct population segments (DPSs) listed under the ESA. Using the stock assessment from Muto *et al.* 2020 for the Central North Pacific stock (10,103 whales) and calculations in Wade *et al.* 2016; 9,487 whales are expected to be from the Hawaii DPS and 606 from the Mexico DPS.

Therefore, for purposes of consultation under the ESA, we anticipate that 7 whales of the total takes would be individuals from the Mexico DPS ($104 \times 0.061 = 6.3$ rounded to 7).

No take by Level A harassment is authorized or anticipated to occur due to their large size and ability to be visibly detected in the project area if an animal should approach the Level A harassment zone as well as the size of the Level A harassment zones, which are expected to be manageable for the protected species observers (PSOs). The calculated Level A isopleths for low-frequency cetaceans are 113 m or less with the exception of DTH of limited duration of 24-in piles where they range from 166.3 - 346.0 m. The shutdown zones (Table 10) are larger for all calculated Level A harassment isopleths during all pile driving activities (vibratory, impact and DTH) for all cetaceans.

Killer Whales

There are no density estimates of killer whales available in the project area. Three distinct eco-types occur in Southeast Alaska (resident, transient and offshore whales; Ford *et al.*, 1994; Dahlheim *et al.*, 1997, 2008). Dahlheim *et al.* (2009) observed transient killer whales within Lynn Canal, Icy Strait, Stephens Passage, Frederick Sound, and upper Chatham Strait. As determined during a line-transect survey by Dalheim *et al.* (2008), the greatest number of transient killer whale observed in Southeast Alaska occurred in 1993 with 32 animals seen over 2 months for an average of 16 sightings per

month. Resident pods were also observed in Icy Strait, Lynn Canal, Stephens Passage, Frederick Sound and upper Chatham Strait (Dalheim *et al.* 2008). Transient killer whales are often found in long-term stable social units (pods) of 1 to 16 whales. Average pod sizes in Southeast Alaska were 6 in spring, 5 in summer, and 4 in fall. Pod sizes of transient whales are generally smaller than those of resident social groups. Resident killer whales occur in pods ranging from 7 to 70 whales that are seen in association with one another more than 50 percent of the time (Dahlheim *et al.* 2009; NMFS 2016b). In Southeast Alaska, resident killer whale mean pod size was approximately 21.5 in spring, 32.3 in summer, and 19.3 in fall (Dahlheim *et al.* 2009). Killer whales are observed occasionally during summer throughout Nichols Passage, but their presence in Port Chester is unlikely. Anecdotal local information suggests that killer whales are rarely seen within the Port Chester area, but may be present more frequently in Nichols Passage and other areas around Gravina Island (L. Bethel, personal communication, June 11, 2020 as cited in the application). To be conservative NMFS authorizes one killer whale pod of up to 15 individuals once during the project could be taken by Level B harassment based on a pod of 12 killer whales that may be present each month similar to Tongass Narrows near Ketchikan. Additionally, a recent monitoring report for Tongass Narrows reported 10 individuals sighted and 10 Level B harassment takes of killer whales during May 2021. No take by Level A harassment is authorized or anticipated to occur to the ability to visibly detect these large whales and the small size of the Level A harassment zones. In addition, the shutdown zones are larger than all the calculated Level A harassment isopleths for all pile driving/removal and DTH activities for cetaceans.

Pacific White-Sided Dolphin

There are no density estimates of Pacific white-sided dolphins available in the project area. Most observations of Pacific white-sided dolphins occur off the outer coast or in inland waterways near entrances to the open ocean. Pacific white-sided dolphins

have been observed in Alaska waters in groups ranging from 20 to 164 animals, with the sighting of 164 animals occurring in Southeast Alaska near Dixon Entrance to the south of Metlakatla (Muto *et al.*, 2018). In nearby Tongass Narrows, NMFS estimated that one group of 92 Pacific white-sided dolphin (median between 20 and 164) may occur over a period of 1 year (85 FR 673; January 7, 2020). There are no records of this species occurring in Port Chester, and it is uncommon for individuals to occur in the project area. Therefore, NMFS authorizes one large group of 92 dolphins may be taken by Level B harassment during the project. No take by Level A harassment authorized or anticipated as the Level A harassment isopleths are so small.

Dall's Porpoise

There are no density estimates of Dall's porpoise available in the project area. Little information is available on the abundance of Dall's porpoise in the inland waters of Southeast Alaska. Dall's porpoise are most abundant in spring, observed with lower numbers in the summer, and lowest numbers in fall. Jefferson *et al.*, 2019 presents abundance estimates for Dall's porpoise in these waters and found the abundance in summer (N = 2,680, CV = 19.6 percent), and lowest in fall (N = 1,637, CV = 23.3 percent). No systematic studies of Dall's porpoise abundance or distribution have occurred in Port Chester or Nichols Passage; however, Dall's porpoises have been consistently observed in Lynn Canal, Stephens Passage, upper Chatham Strait, Frederick Sound, and Clarence Strait (Dahlheim *et al.* 2009). The species is generally found in waters in excess of 600 ft (183 m) deep, which do not occur in Port Chester. If Dall's porpoises occur in the project area, they will likely be present in March or April, given the strong seasonal patterns observed in nearby areas of Southeast Alaska (Dahlheim *et al.* 2009). Dall's porpoises are seen once a month or less within Port Chester and Nichols Passage in groups of less than 10 animals (L. Bethel, personal communication, June 11, 2020 as cited in the application).

Dall's porpoises are not expected to occur in Port Chester because the shallow water habitat of the bay is atypical of areas where Dall's porpoises usually occur. Therefore, NMFS authorizes one group of Dall's porpoise (15 individuals) per month, similar to what was estimated in nearby Tongass Narrows, may be taken by Level B harassment for a total of 30 Dall's porpoises during the 26 days of in-water construction (2 months * 15 porpoises per month = 30). No take by Level A harassment is authorized or anticipated to occur due to their rarer occurrence in the project area and the unlikelihood that they would enter the Level A harassment zone and remain long enough to incur PTS in the rare event that they are encountered. No take by Level A harassment is authorized or anticipated to occur, as the calculated isopleths for high-frequency cetaceans are 134 m or less during all activities except during DTH for 24-in piles of limited duration where they are 198 m – 412 m. The shutdown zones (Table 10) are larger for all calculated Level A harassment isopleths during all pile driving activities (vibratory, impact and DTH) for all cetaceans.

Harbor Porpoise

There are no density estimates of harbor porpoise available in the project area. Although there have been no systematic studies or observations of harbor porpoises specific to Port Chester or Nichols Passage, there is potential for them to occur within the project area.

Abundance data for harbor porpoises in Southeast Alaska were collected during 18 seasonal surveys spanning 22 years, from 1991 to 2012 (Dahlheim *et al.* 2015). During that study, a total of 81 harbor porpoises were observed in the southern inland waters of Southeast Alaska, including Clarence Strait. The average density estimate for all survey years in Clarence Strait was 0.02 harbor porpoises per square kilometer. There does not appear to be any seasonal variation in harbor porpoise density for the inland waters of Southeast Alaska (Dahlheim *et al.* 2015). Approximately one to two groups of

harbor porpoises are observed each week in group sizes of up to 10 animals around Driest Point, located 5 km (3.1 mi) north of the project location (L. Bethel, personal communication, June 11, 2020 as cited in the application). Therefore, NMFS authorizes that 2 groups of 5 harbor porpoises (average group size of local sightings) per 5 days of in-water work may be taken by Level B harassment. Expressed in another way, this is an average of 2 harbor porpoise per day of in-water work. Therefore, we estimate 52 exposures over the course of the project (26 days * 2 porpoises per day = 52). No take by Level A harassment is authorized or anticipated to occur, as the calculated isopleths for high-frequency cetaceans are 134 m or less during all activities except during DTH for 24-in piles of limited duration where they are 198 m – 412 m. The shutdown zones (Table 10) are larger for all calculated Level A harassment isopleths during all pile driving activities (vibratory, impact and DTH) for all cetaceans.

Harbor Seal

There are no density estimates of harbor seals available in the project area. Harbor seals are commonly sighted in the waters of the inside passages throughout Southeast Alaska. Surveys in 2015 estimated 429 (95 percent Confidence Interval [CI]: 102–1,203) harbor seals on the northwest coast of Annette Island, between Metlakatla and Walden Point. An additional 90 (95 percent CI: 18–292) were observed along the southwest coast of Annette Island, between Metlakatla and Tamgas Harbor (NOAA 2019). The Alaska Fisheries Science Center identifies three haulouts in Port Chester (less than a mile from the project area) and three additional haulouts north of Driest Point (3.7 mi from the project area). Abundance estimates for these haulouts are not available, but they are all denoted as having had more than 50 harbor seals at one point in time (NOAA 2020). However, local biologists report only small numbers (fewer than 10) of harbor seals are regularly observed in Port Chester. As many as 10 to 15 harbor seals may utilize Sylburn Harbor, north of Metlakatla across Driest Point (R. Cook, personal communication, June

5, 2020 as cited in the application), as a haulout location. Therefore, NMFS authorizes 15 harbor seals may be taken by Level B harassment each day, for a total of 390 exposures (26 days * 15 seals per day = 390). No take by Level A harassment is authorized or anticipated to occur, as the calculated isopleths are 60 m or less during all activities except during DTH for 24-in piles of limited duration where they are 89 – 186 m. In addition, the shutdown zones (Table 10) are larger for all calculated Level A harassment isopleths during all pile driving activities (vibratory, impact and DTH) for all pinnipeds.

Steller Sea Lion

There are no density estimates of Steller sea lions available in the project area. Steller sea lions are common within the project area; however, systematic counts or surveys have not been completed in the area directly surrounding Metlakatla. Three haulouts are located within 150 km (93 mi) of the project area (Fritz *et al.* 2016a); the nearest documented haulout is West Rock, about 45 km (28 mi) south of Metlakatla. West Rock had a count of 703 individuals during a June 2017 survey and 1,101 individuals during a June 2019 survey (Sweeney *et al.* 2017, 2019). Aerial surveys occurred intermittently between 1994 and 2015, and averaged 982 adult Steller sea lions (Fritz *et al.*, 2016b). Anecdotal evidence indicate that 3 to 4 Steller sea lions utilize a buoy as a haulout near the entrance of Port Chester, about 3.2 km (2 mi) from the project location (L. Bethel, personal communication, June 11, 2020 as cited in the application). Steller sea lions are not known to congregate near the cannery in Metlakatla. Anecdotal evidence suggests that the species assemblages and abundance in Metlakatla are similar to Tongass Narrows where 20 sea lions are estimated each day during July through September. A recent monitoring report for Tongass Narrows reported 41 individual sightings of Steller sea lions with 9 takes by Level B harassment in May 2021. Therefore to be conservative, NMFS authorizes two groups of 10 Steller sea lions (20 Steller sea lions) may be taken by Level B harassment for a total of 520 Steller sea lions (26 days *

20 sea lions per day = 520). No take by Level A harassment is authorized or anticipated to occur as the largest Level A isopleth calculated was 13.5 m during DTH of 24-in piles and the remaining isopleths were less than 10 m. In addition, the shutdown zones (Table 10) are larger for all calculated Level A harassment isopleths during all pile driving activities (vibratory, impact and DTH) for all pinnipeds.

Table 9 below summarizes the authorized take for all the species described above as a percentage of stock abundance.

Table 9--Take Estimates as a Percentage of Stock Abundance

Species	Stock (N _{EST})	Level B Harassment	Percent of Stock
Minke Whale	Alaska (N/A)	12	N/A
Humpback Whale	Central North Pacific (10,103)	104	Less than 1 percent
Killer Whale	Alaska Resident (2,347) Northern Resident (302) West Coast Transient (349)	15	0.6 ^a 5.0 ^a 4.3 ^a
Pacific White-Sided Dolphin	North Pacific (26,880)	92	Less than 1 percent
Dall's Porpoise	Alaska (83,400) ^b	30	Less than 1 percent
Harbor Porpoise	Southeast Alaska (NA)	52	NA
Harbor Seal	Clarence Strait (27,659)	390	1.4
Steller Sea Lion	Eastern U.S. (43,201)	520	1.2

^a Take estimates are weighted based on calculated percentages of population for each distinct stock, assuming animals present would follow same probability of presence in project area.

^b Jefferson *et al.* 2019 presents the first abundance estimates for Dall's porpoise in the waters of Southeast Alaska with highest abundance recorded in spring (N=5,381, CV= 25.4 percent), lower numbers in summer (N=2,680, CV=19.6 percent), and lowest in fall (N=1,637, CV=23.3 percent). However, NMFS currently recognizes a single stock of Dall's porpoise in Alaskan waters and an estimate of 83,400 Dall's porpoises is used by NMFS for the entire stock (Muto *et al.*, 2020).

Mitigation

In order to issue an IHA under Section 101(a)(5)(D) of the MMPA, NMFS must set forth the permissible methods of taking pursuant to such activity, and other means of

effecting the least practicable impact on such species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of such species or stock for taking for certain subsistence uses (latter not applicable for this action). NMFS regulations require applicants for incidental take authorizations to include information about the availability and feasibility (economic and technological) of equipment, methods, and manner of conducting such activity or other means of effecting the least practicable adverse impact upon the affected species or stocks and their habitat (50 CFR 216.104(a)(11)).

In evaluating how mitigation may or may not be appropriate to ensure the least practicable adverse impact on species or stocks and their habitat, as well as subsistence uses where applicable, we carefully consider two primary factors:

1) The manner in which, and the degree to which, the successful implementation of the measure(s) is expected to reduce impacts to marine mammals, marine mammal species or stocks, and their habitat. This considers the nature of the potential adverse impact being mitigated (likelihood, scope, range). It further considers the likelihood that the measure will be effective if implemented (probability of accomplishing the mitigating result if implemented as planned) the likelihood of effective implementation (probability implemented as planned); and

2) The practicability of the measures for applicant implementation, which may consider such things as cost, impact on operations, and, in the case of a military readiness activity, personnel safety, practicality of implementation, and impact on the effectiveness of the military readiness activity.

General

The AKDOT&PF will follow mitigation procedures as outlined in their Marine Mammal Monitoring Plan and as described below. In general, if poor environmental

conditions restrict visibility full visibility of the shutdown zone, pile driving installation and removal as well as DTH would be delayed.

Training

The AKDOT&PF must ensure that construction supervisors and crews, the monitoring team, and relevant AKDOT&PF staff are trained prior to the start of construction activity subject to this IHA, so that responsibilities, communication procedures, monitoring protocols, and operational procedures are clearly understood. New personnel joining during the project must be trained prior to commencing work.

Avoiding Direct Physical Interaction

The AKDOT&PF must avoid direct physical interaction with marine mammals during construction activity. If a marine mammal comes within 10 m of such activity, operations will cease and vessels will reduce speed to the minimum level required to maintain steerage and safe working conditions, as necessary to avoid direct physical interaction.

Shutdown Zones

For all pile driving/removal and DTH activities, the AKDOT&PF will establish a shutdown zone for a marine mammal species that is greater than its corresponding Level A harassment zone (Table 10). The purpose of a shutdown zone is generally to define an area within which shutdown of the activity would occur upon sighting of a marine mammal (or in anticipation of an animal entering the defined area). The shutdown zones are larger than all the calculated Level A harassment isopleths for all pile driving/removal and DTH activities for cetaceans and pinnipeds.

Table 10--Pile Driving Shutdown Zones during Project Activities

Activity	Pile Diameter	Pile Type or Number of Piles	Shutdown Distance (meters)	
			Cetaceans	Pinnipeds
Vibratory Installation/	16- and 24-in	Battered and Plumb	50	50

Removal				
DTH	24-in	Temporary	200	200
		Battered, Permanent	260	120
		Plumb, Permanent	415	200
DTH	8-in	Permanent	100	50
Impact	24-in	3 piles	135	100
		2 piles		
		1 pile	100	

Soft Start

The AKDOT&PF must use soft start techniques when impact pile driving. Soft start requires contractors to provide an initial set of three strikes from the hammer at reduced energy, followed by a 30-second waiting period. Then two subsequent reduced-energy strike sets would occur. A soft start will be implemented at the start of each day's impact pile driving and at any time following cessation of impact pile driving for a period of 30 minutes or longer. Soft start is not required during vibratory pile driving and removal activities.

Based on our evaluation of the applicant's planned measures, NMFS has determined that the planned mitigation measures provide the means of effecting the least practicable impact on the affected species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance.

Monitoring and Reporting

In order to issue an IHA for an activity, Section 101(a)(5)(D) of the MMPA states that NMFS must set forth, requirements pertaining to the monitoring and reporting of such taking. The MMPA implementing regulations at 50 CFR 216.104 (a)(13) indicate that requests for authorizations must include the suggested means of accomplishing the necessary monitoring and reporting that will result in increased knowledge of the species and of the level of taking or impacts on populations of marine mammals that are expected

to be present in the action area. Effective reporting is critical both to compliance as well as ensuring that the most value is obtained from the required monitoring.

Monitoring and reporting requirements prescribed by NMFS should contribute to improved understanding of one or more of the following:

- Occurrence of marine mammal species or stocks in the area in which take is anticipated (*e.g.*, presence, abundance, distribution, density);
- Nature, scope, or context of likely marine mammal exposure to potential stressors/impacts (individual or cumulative, acute or chronic), through better understanding of: (1) action or environment (*e.g.*, source characterization, propagation, ambient noise); (2) affected species (*e.g.*, life history, dive patterns); (3) co-occurrence of marine mammal species with the action; or (4) biological or behavioral context of exposure (*e.g.*, age, calving or feeding areas);
- Individual marine mammal responses (behavioral or physiological) to acoustic stressors (acute, chronic, or cumulative), other stressors, or cumulative impacts from multiple stressors;
- How anticipated responses to stressors impact either: (1) long-term fitness and survival of individual marine mammals; or (2) populations, species, or stocks;
- Effects on marine mammal habitat (*e.g.*, marine mammal prey species, acoustic habitat, or other important physical components of marine mammal habitat); and
- Mitigation and monitoring effectiveness.

Monitoring Zones

The AKDOT&PF will conduct monitoring to include the area within the Level B harassment presented in Table 8. Monitoring will include all areas where SPLs are equal to or exceed 120 dB rms (for vibratory pile driving/removal and DTH) and 160 dB rms (for impact pile driving). These zones provide utility for monitoring conducted for mitigation purposes (*i.e.*, shutdown zone monitoring) by establishing monitoring

protocols for areas adjacent to the shutdown zones. Monitoring of the Level B harassment zones enables observers to be aware of and communicate the presence of marine mammals in the project area, but outside the shutdown zone, and thus prepare for potential shutdowns of activity.

Pre-Start Clearance Monitoring

Pre-start clearance monitoring must be conducted during periods of visibility sufficient for the lead PSO to determine the shutdown zones clear of marine mammals. Pile driving and DTH may commence when the determination is made.

Visual Monitoring

Monitoring must take place from 30 minutes (min) prior to initiation of pile driving and DTH activity (*i.e.*, pre-start clearance monitoring) through 30 min post-completion of pile driving and DTH activity. If a marine mammal is observed entering or within the shutdown zones, pile driving and DTH activity will be delayed or halted. If pile driving or DTH is delayed or halted due to the presence of a marine mammal, the activity may not commence or resume until either the animal has voluntarily exited and been visually confirmed beyond the shutdown zone or 15 min have passed without re-detection of the animal. Pile driving and DTH activity will be halted upon observation of either a species for which incidental take is not authorized or a species for which incidental take has been authorized but the authorized number of takes has been met, entering or within the harassment zone.

PSO Monitoring Requirements and Locations

The AKDOT&PF will establish monitoring locations as described in the Marine Mammal Monitoring Plan. PSOs will be responsible for monitoring, the shutdown zones, the Level B harassment zones, and the pre-clearance zones, as well as effectively documenting Level B harassment take. As described in more detail in the Reporting section below, they will also (1) document the frequency at which marine mammals are

present in the project area, (2) document behavior and group composition (3) record all construction activities, and (4) document observed reactions (changes in behavior or movement) of marine mammals during each sighting. Observers will monitor for marine mammals during all in-water pile installation/removal and DTH associated with the project. The AKDOT&PF will monitor the project area to the extent possible based on the required number of PSOs, required monitoring locations, and environmental conditions. Monitoring will be conducted by PSOs from land. For all pile driving and DTH activities, a minimum of one observer must be assigned to each active pile driving and DTH location to monitor the shutdown zones. Two PSOs must be onsite during all in-water activities and will monitor from the best vantage point. Due to the remote nature of the area, the PSOs will meet with the future designated Contractor and AKDOT&PF to determine the most appropriate observation location(s) for monitoring during pile installation and removal. These observers must record all observations of marine mammals, regardless of distance from the pile being driven or during DTH.

In addition, PSOs will work in shifts lasting no longer than 4 hrs with at least a 1-hr break between shifts, and will not perform duties as a PSO for more than 12 hrs in a 24-hr period (to reduce PSO fatigue).

Monitoring of pile driving will be conducted by qualified, NMFS-approved PSOs. The AKDOT&PF shall adhere to the following conditions when selecting PSOs:

- PSOs must be independent (*i.e.*, not construction personnel) and have no other assigned tasks during monitoring periods;
- At least one PSO must have prior experience performing the duties of a PSO during construction activities pursuant to a NMFS-issued incidental take authorization;
- Other PSOs may substitute other relevant experience, education (degree in biological science or related field), or training;

- Where a team of three PSOs are required, a lead observer or monitoring coordinator shall be designated. The lead observer must have prior experience performing the duties of a PSO during construction activity pursuant to a NMFS-issued incidental take authorization; and
- PSOs must be approved by NMFS prior to beginning any activity subject to this IHA.

The AKDOT&PF will ensure that the PSOs have the following additional qualifications:

- Visual acuity in both eyes (correction is permissible) sufficient for discernment of moving targets at the water's surface with ability to estimate target size and distance; use of binoculars may be necessary to correctly identify the target;
- Experience and ability to conduct field observations and collect data according to assigned protocols;
- Experience or training in the field identification of marine mammals, including the identification of behaviors;
- Sufficient training, orientation, or experience with the construction operation to provide for personal safety during observations;
- Writing skills sufficient to prepare a report of observations including but not limited to the number and species of marine mammals observed; dates and times when in-water construction activities were conducted; dates, times, and reason for implementation of mitigation (or why mitigation was not implemented when required); and marine mammal behavior; and
- Ability to communicate orally, by radio or in person, with project personnel to provide real-time information on marine mammals observed in the area as necessary.

Final Report

The AKDOT&PF will submit a draft report to NMFS on all monitoring conducted under this IHA within 90 calendar days of the completion of monitoring or 60 calendar days prior to the requested issuance of any subsequent IHA for construction activity at the same location, whichever comes first. A final report must be prepared and submitted within 30 days following resolution of any NMFS comments on the draft report. If no comments are received from NMFS within 30 days of receipt of the draft report, the report shall be considered final. All draft and final marine mammal monitoring reports must be submitted to *PR.ITP.MonitoringReports@noaa.gov* and *ITP.Egger@noaa.gov*. The report must contain the informational elements described in the Marine Mammal Monitoring Plan and, at minimum, must include:

- Dates and times (begin and end) of all marine mammal monitoring;
- Construction activities occurring during each daily observation period, including:
 - How many and what type of piles were driven and by what method (*e.g.*, impact, vibratory, DTH);
 - Total duration of driving time for each pile (vibratory driving) and number of strikes for each pile (impact driving); and
 - For DTH, duration of operation for both impulsive and non-pulse components.
- PSO locations during marine mammal monitoring;
- Environmental conditions during monitoring periods (at beginning and end of PSO shift and whenever conditions change significantly), including Beaufort sea state and any other relevant weather conditions including cloud cover, fog, sun glare, and overall visibility to the horizon, and estimated observable distance;
- Upon observation of a marine mammal, the following information:
 - PSO who sighted the animal and PSO location and activity at time of sighting;

- Time of sighting;
 - Identification of the animal (*e.g.*, genus/species, lowest possible taxonomic level, or unidentified), PSO confidence in identification, and the composition of the group if there is a mix of species;
 - Distance and bearing of each marine mammal observed to the pile being driven for each sighting (if pile driving and DTH was occurring at time of sighting);
 - Estimated number of animals (min/max/best);
 - Estimated number of animals by cohort (adults, juveniles, neonates, group composition etc.);
 - Animal's closest point of approach and estimated time spent within the harassment zone; and
 - Description of any marine mammal behavioral observations (*e.g.*, observed behaviors such as feeding or traveling), including an assessment of behavioral responses to the activity (*e.g.*, no response or changes in behavioral state such as ceasing feeding, changing direction, flushing, or breaching).
- Detailed information about implementation of any mitigation (*e.g.*, shutdowns and delays), a description of specific actions that ensued, and resulting changes in behavior of the animal, if any; and
 - All PSO datasheets and/or raw sightings data.

Reporting of Injured or Dead Marine Mammals

In the event that personnel involved in the construction activities discover an injured or dead marine mammal, the AKDOT&PF must report the incident to NMFS Office of Protected Resources (OPR) (*PR.ITP.MonitoringReports@noaa.gov*), NMFS (301-427-8401) and to the Alaska regional stranding network (877-925-7773) as soon as

feasible. If the death or injury was clearly caused by the specified activity, the AKDOT&PF must immediately cease the specified activities until NMFS OPR is able to review the circumstances of the incident and determine what, if any, additional measures are appropriate to ensure compliance with the terms of this IHA. The AKDOT&PF will not resume their activities until notified by NMFS. The report must include the following information:

- Time, date, and location (latitude/longitude) of the first discovery (and updated location information if known and applicable);
- Species identification (if known) or description of the animal(s) involved;
- Condition of the animal(s) (including carcass condition if the animal is dead);
- Observed behaviors of the animal(s), if alive;
- If available, photographs or video footage of the animal(s); and
- General circumstances under which the animal was discovered.

Negligible Impact Analysis and Determination

NMFS has defined negligible impact as an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival (50 CFR 216.103). A negligible impact finding is based on the lack of likely adverse effects on annual rates of recruitment or survival (*i.e.*, population-level effects). An estimate of the number of takes alone is not enough information on which to base an impact determination. In addition to considering estimates of the number of marine mammals that might be “taken” through harassment, NMFS considers other factors, such as the likely nature of any responses (*e.g.*, intensity, duration), the context of any responses (*e.g.*, critical reproductive time or location, migration), as well as effects on habitat, and the likely effectiveness of the mitigation. We also assess the number, intensity, and

context of estimated takes by evaluating this information relative to population status. Consistent with the 1989 preamble for NMFS's implementing regulations (54 FR 40338; September 29, 1989), the impacts from other past and ongoing anthropogenic activities are incorporated into this analysis via their impacts on the environmental baseline (*e.g.*, as reflected in the regulatory status of the species, population size and growth rate where known, ongoing sources of human-caused mortality, or ambient noise levels).

As stated in the mitigation section, shutdown zones that are larger than the Level A harassment zones will be implemented, which, in combination with the fact that the zones are small to begin with, is expected to avoid the likelihood of Level A harassment for marine mammals species.

Exposures to elevated sound levels produced during pile driving activities may cause behavioral disturbance of some individuals, but they are expected to be mild and temporary. Effects on individuals that are taken by Level B harassment, as enumerated in the Take Estimation section, on the basis of reports in the literature as well as monitoring from other similar activities, will likely be limited to reactions such as increased swimming speeds, increased surfacing time, or decreased foraging (if such activity were occurring) (*e.g.*, Thorson and Reyff, 2006; Lerma, 2014). Most likely, individuals will simply move away from the sound source and be temporarily displaced from the areas of pile driving, although even this reaction has been observed primarily only in association with impact pile driving. These reactions and behavioral changes are expected to subside quickly when the exposures cease.

During all impact driving, implementation of soft start procedures and monitoring of established shutdown zones will be required, significantly reducing the possibility of injury. Given sufficient notice through use of soft start (for impact driving), marine mammals are expected to move away from an irritating sound source prior to it becoming potentially injurious. In addition, PSOs will be stationed within the action area whenever

pile driving/removal and DTH activities are underway. Depending on the activity, the AKDOT&PF will employ the use of two PSOs to ensure all monitoring and shutdown zones are properly observed.

The project would likely not permanently impact any marine mammal habitat since the project will occur within the same footprint as existing marine infrastructure. The nearshore and intertidal habitat where the project will occur is an area of relatively high marine vessel traffic and some local individuals would likely be somewhat habituated to the level of activity in the area, further reducing the likelihood of more severe impacts. The closest pinniped haulouts are used by harbor seals and are less than a mile from the project area; however, for the reasons described immediately above (including the nature of expected responses and the duration of the project) impacts to reproduction or survival of individuals is not anticipated, much less effects on the species or stock. There are no other biologically important areas for marine mammals near the project area.

In addition, impacts to marine mammal prey species are expected to be minor and temporary. Overall, the area impacted by the project is very small compared to the available habitat around Metlakatla. The most likely impact to prey will be temporary behavioral avoidance of the immediate area. During pile driving/removal and DTH activities, it is expected that fish and marine mammals would temporarily move to nearby locations and return to the area following cessation of in-water construction activities. Therefore, indirect effects on marine mammal prey during the construction are not expected to be substantial.

In summary and as described above, the following factors primarily support our determination that the impacts resulting from this activity are not expected to adversely affect the species or stock through effects on annual rates of recruitment or survival:

- No mortality is anticipated or authorized;

- No take by Level A harassment is expected or authorized;
- Anticipated incidents of Level B harassment consist of, at worst, temporary modifications in behavior;
- The required mitigation measures (*i.e.* shutdown zones) are expected to be effective in reducing the effects of the specified activity;
- Minimal impacts to marine mammal habitat/prey are expected;
- The action area is located and within an active marine commercial area, and;
- There are no known biologically important areas in the vicinity of the project, with the exception of nearby harbor seal haulouts – however, as described above, exposure to the work conducted in the vicinity of the haulouts is not expected to impact the reproduction or survival of any individual seals.

Based on the analysis contained herein of the likely effects of the specified activity on marine mammals and their habitat, and taking into consideration the implementation of the monitoring and mitigation measures, NMFS finds that the total marine mammal take from the planned activity will have a negligible impact on all affected marine mammal species or stocks.

Small Numbers

As noted above, only small numbers of incidental take may be authorized under Section 101(a)(5)(A) and (D) of the MMPA for specified activities other than military readiness activities. The MMPA does not define small numbers and so, in practice, where estimated numbers are available, NMFS compares the number of individuals taken to the most appropriate estimation of abundance of the relevant species or stock in our determination of whether an authorization is limited to small numbers of marine mammals. When the predicted number of individuals to be taken is fewer than one third of the species or stock abundance, the take is considered to be of small numbers.

Additionally, other qualitative factors may be considered in the analysis, such as the temporal or spatial scale of the activities.

Take of six of the marine mammal stocks authorized will comprise at most approximately 1.4 percent or less of the stock abundance. There are no official stock abundances for harbor porpoise and minke whales; however, as discussed in greater detail in the Description of Marine Mammals in the Area of Specified Activities in the **Federal Register** notice of the proposed IHA (86 FR 34203; June 29, 2021), we believe for the abundance information that is available, the estimated takes are likely small percentages of the stock abundance. For harbor porpoise, the abundance for the Southeast Alaska stock is likely more represented by the aerial surveys that were conducted as these surveys had better coverage and were corrected for observer bias. Based on this data, the estimated take could potentially be approximately 4 percent of the stock abundance. However, this is unlikely and the percentage of the stock taken is likely lower as the take estimates are conservative and the project occurs in a small footprint compared to the available habitat in Southeast Alaska. For minke whales, in the northern part of their range they are believed to be migratory and so few minke whales have been seen during three offshore Gulf of Alaska surveys that a population estimate could not be determined. With only twelve authorized takes for this species, the percentage of take in relation to the stock abundance is likely to be very small.

Based on the analysis contained herein of the planned activity (including the mitigation and monitoring measures) and the anticipated take of marine mammals, NMFS finds that small numbers of marine mammals will be taken relative to the population size of the affected species or stocks.

Unmitigable Adverse Impact Analysis and Determination

In order to issue an IHA, NMFS must find that the specified activity will not have an “unmitigable adverse impact” on the subsistence uses of the affected marine mammal

species or stocks by Alaskan Natives. NMFS has defined “unmitigable adverse impact” in 50 CFR 216.103 as an impact resulting from the specified activity: (1) That is likely to reduce the availability of the species to a level insufficient for a harvest to meet subsistence needs by: (i) Causing the marine mammals to abandon or avoid hunting areas; (ii) Directly displacing subsistence users; or (iii) Placing physical barriers between the marine mammals and the subsistence hunters; and (2) That cannot be sufficiently mitigated by other measures to increase the availability of marine mammals to allow subsistence needs to be met.

The project area does not spatially overlap any known subsistence hunting. The project area is a developed area with regular marine vessel traffic. Nonetheless, the AKDOT&PF provided advanced public notice of construction activities to reduce construction impacts on local residents, adjacent businesses, and other users of Port Chester and nearby areas. This included notification to nearby Alaska Native tribes that may have members who hunt marine mammals for subsistence. Currently, the Metlakatla Indian Community does not authorize the harvest of marine mammals for subsistence use (R. Cook, personal communication, June 5, 2020 as cited in the application).

The planned project is not likely to adversely impact the availability of any marine mammal species or stocks that are commonly used for subsistence purposes or to impact subsistence harvest of marine mammals in the region because construction activities are localized and temporary and mitigation measures will be implemented to minimize disturbance of marine mammals in the project area. Accordingly, NMFS has determined that there will not be an unmitigable adverse impact on the availability of any marine mammals for taking for subsistence uses from the AKDOT&PF’s planned activities.

Endangered Species Act

Section 7(a)(2) of the Endangered Species Act of 1973 (ESA: 16 U.S.C. 1531 *et seq.*) requires that each Federal agency insure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of designated critical habitat. To ensure ESA compliance for the issuance of IHAs, NMFS consults internally whenever we propose to authorize take for endangered or threatened species, in this case with the Alaska Regional Office (AKRO).

NMFS is authorizing take of the Central North Pacific stock of humpback whales, including individuals from the Mexico DPS of humpback whales, which are listed under the ESA. The Permit and Conservation Division completed a Section 7 consultation with the AKRO for the issuance of this IHA. The AKRO's biological opinion states that the action is not likely to jeopardize the continued existence of the Mexico DPS of humpback whales.

Authorization

As a result of these determinations, NMFS authorizes an IHA to the AKDOT&PF for conducting for the planned pile driving and removal activities as well as DTH during construction of the Metlakatla Seaplane Facility Refurbishment Project, Metlakatla, Alaska for one year, beginning August 2021, provided the previously mentioned mitigation, monitoring, and reporting requirements are incorporated.

Dated: August 3, 2021.

Catherine Marzin, *Acting Director, Office of Protected Resources,*
National Marine Fisheries Service.

